

Abstract

The present study deals with the phytochemical study, antimicrobial and antioxidant, and antidiabetic studies of *Wrightia zeylanica* by employing some in-vitro contemporary methods. *Wrightia zeylanica* was collected from Botanical garden GCUL, dried through nitrogen quenching. Different solvent extracts compositions i.e. 0%, 20%, 40%, 60%, 80%, and 100% in ethanol and methanol were obtained by varying water quantity. Phytochemical screening was performed qualitatively for alkaloids, carbohydrates, flavonoids, saponins, and tannins. Radical scavenging potential of plant extracts was estimated by DPPH assay. Percentage remaining of DPPH were determined for 0%, 20%, 40%, 60%, 80%, and 100% compositions of methanol and ethanol as 23.49, 47.41, 46.99, 22.36, 25.05, and 55.90 in methanol and 73.91, 18.11, 25.25, 16.97, 14.596, 13.25 in ethanol respectively. Here, 60 % methanolic composition and 100% ethanolic composition showed maximum radical scavenging ability i.e. 23.49 ± 0.01 and 13.25 ± 0.003 respectively. The antioxidant potential of methanol and ethanol plant extracts compositions was determined using ABTS method with Trolox as a standard. All the compositions of *W.zeylanica* plant extract exhibited antioxidant potential. The results were depicted in TEAC (Trolox equivalent antioxidant capacity). But 60% methanol, and 100 percent ethanolic composition showed the highest potential, higher is the TEAC value, and greater is the free radical scavenging. The TEAC value for both 60% and 100% methanol and ethanol compositions was 9.49 mM. . Total phenolic contents were determined through Folin-Ciocalteu method. Using TPC assay, the amount of total phenolics from 0%, 20%, 40%, 60%, 80%, and 100% compositions of methanol were 349.25, 919.25, 931, 911, 349, and 236, also for ethanol 199.25, 226.75, 166.75, 61.75, 244.25, and 349.25 mg/L of Gallic acid equivalents. Here 40% composition of methanol and 100% composition of ethanol contains higher amount of phenolic compounds. The total Flavonoid contents were found to be 195.27, 225.27, 221.63, 232.54, 202.54, and 198.90 mg/L and 202.54, 217.09, 193.45, 188.90, 189.81, and 231.63 mg/L of catechin for methanol and ethanol fractions respectively. The percentage bound iron for metal chelating were 26.55, 24.18, 21.93, 31.46, 14.24, 23.33 percent and 24.65, 10.73, 32.57, 23, 20.22, 28.1 percent for methanol and ethanol respectively.